

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
24 February 2005 (24.02.2005)

PCT

(10) International Publication Number  
**WO 2005/017524 A1**

(51) International Patent Classification<sup>7</sup>: **G01N 33/487**,  
C12Q 1/00

Court, Shrublands Close, Chelmsford, Essex CM2 6WY  
(GB). **ZHOU, Xiao, Feng** [GB/GB]; 53 Barlows Reach,  
Chelmsford, Essex CM2 6SN (GB).

(21) International Application Number:  
PCT/GB2004/003143

(74) Agent: **LOVELESS, Ian, Mark**; 16 Theobalds Road,  
London WC1X 8PL (GB).

(22) International Filing Date: 19 July 2004 (19.07.2004)

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0318356.3 5 August 2003 (05.08.2003) GB

(71) Applicant (for all designated States except US): **E2V  
TECHNOLOGIES (UK) LIMITED** [GB/GB]; 106  
Waterhouse Lane, Chelmsford, Essex CM1 2QU (GB).

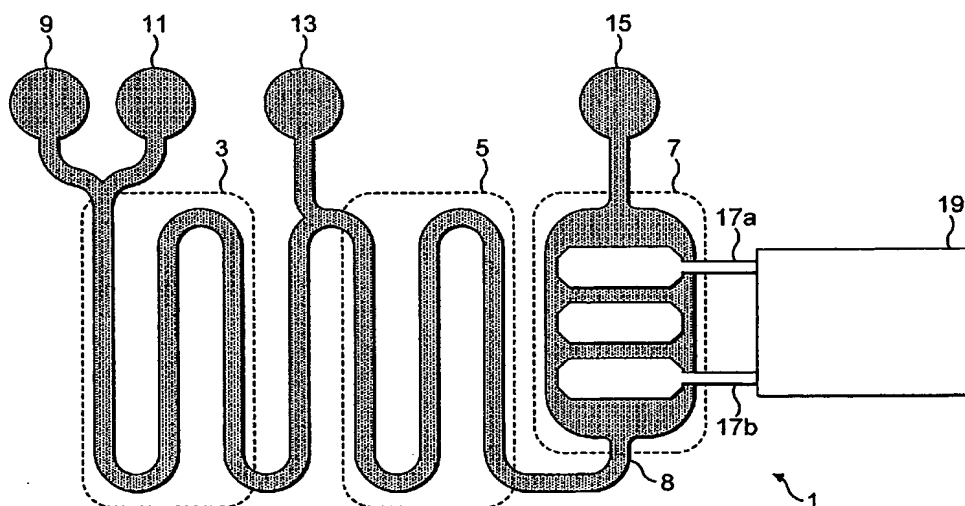
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ALLEN, Brian,  
Phillip** [GB/GB]; 30 Church Lane, Toppesfield, Essex CO9  
4DS (GB). **GILBERT, Richard** [GB/GB]; 3 Riverbank

[Continued on next page]

(54) Title: REACTION CONDITIONS SENSOR



(57) Abstract: A method and apparatus (1) for detecting adverse conditions during the analysis of chemical and biological processes are disclosed. In one embodiment, the reaction conditions in a microelectrochemical reaction chamber (7) are monitored. The reaction chamber (7) comprises electrodes (17a, 17b) arranged to pass an electric current through reaction mixture located within the reaction chamber, thereby inducing an electrochemical reaction. A detection circuit (19) is provided to detect and measure the electric current flowing between the electrodes (17a, 17b). The detection circuit (19) generates a signal indicating whether the measured current lies inside or outside a predetermined range of values. If the measured current lies outside the expected range of values, then the reaction conditions are adverse. A single pair of electrodes may perform a dual function of both inducing the electrochemical reaction detection. In another embodiment, electrodes are for detecting the presence of analytes Using the combined techniques of surface enhanced Raman scattering and surface plasmon resonance.



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*